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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/585,472	06/02/2000	Michiaki Sakamoto	157330/99	6609

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McGinn & Gibb P C
1701 Clarendon Boulevard
Suite 100
Arlington, VA 22209

EXAMINER
RUDE, TIMOTHY L

ART UNIT	PAPER NUMBER
2871	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/585,472	Applicant(s) SAKAMOTO, MICHIAKI	
	Examiner Timothy L Rude	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: In claim 7, line 19, "tin" should be changed to - - thin - - . Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhong et al (Zhong) USPAT 5,994,721.

As to claim 1, Zhong discloses in Figures 6a and 6c, (col. 3, line 35 through col. 4, line 10 and col. 8, line 22 through col. 15, line 10) a conventional red-green-blue (RGB) active matrix liquid crystal display (LCD) configuration including a first substrate and a second substrate, at least one of the first and second substrates being transparent; a liquid crystal layer put between the first and second substrates; a color filter, said first substrate including a plurality of scanning lines; a plurality of signal lines crossing the scanning lines in a matrix manner; a plurality of thin film transistors formed

at intersections of the scanning lines and signal lines, respectively; a pixel electrode connected to said plurality of thin film transistors, said second substrate including a counter electrode, liquid crystal molecules being driven by an electric field between said pixel electrode and said counter electrode to thereby make a display. Zhong discloses, in Figure 6c, (col. 3, line 35 through col. 4, line 10 and col. 8, line 22 through col. 15, line 10) a pixel electrode, 3, arranged on said color filter and connected to said thin film transistors through a contact hole provided in said color filter, 101; and gate insulating layers, 21, of said thin film transistors is removed in a light transmission region within pixels surrounded by said scanning lines and said signal lines.

Zhong does not explicitly disclose and does not preclude a passivation film for protecting said thin film transistors (TFTs). The use of passivation films to protect TFTs is well known in the art of liquid crystals.

Zhong is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to remove the gate insulating layer (and necessarily the overlying passivation layer) from the light transmission region within pixels prior to depositing the color filter in order to achieve adequate color filter layer thickness to minimize pixel electrode capacitance (col. 6, lines 1-35).

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify a conventional RGB active matrix LCD configuration with passivation layer by removing the gate insulating layer (and necessarily the overlying passivation layer) from the light transmission region within pixels prior to depositing the color filter.

As to claim 2, Zhong discloses in Figures 6a and 6c, (col. 3, line 35 through col. 4, line 10 and col. 8, line 22 through col. 15, line 10) a conventional RGB active matrix LCD configuration including a first substrate and a second substrate, at least one of the first and second substrate being transparent; a liquid crystal layer put between the first and second substrate; a color filter; said first substrate including a plurality of scanning lines; a plurality of signal lines crossing the plurality of scanning lines in a matrix manner; a plurality of thin film transistors formed at intersections of the scanning lines and the signal lines, respectively; a pixel electrode connected to said thin film transistors, said second substrate including a counter electrode, liquid crystal molecules being driven by an electric field between said pixel electrode and said counter electrode to thereby make display.

Zhong does not explicitly disclose and does not preclude a passivation film for protecting said thin film transistors (TFTs). It is well known in the art to provide a passivation film for protecting said thin film transistors and an overcoat layer to protecting said color filter, said overcoat layer formed on said color filter.

Zhong teaches said pixel electrode is arranged on said color filter, and necessarily on said overcoat layer and connected to said thin film transistors through a contact hole provided in said color filter and necessarily said overcoat layer; and gate insulating layers of said thin film transistors and necessarily said passivation film are removed in a light transmission region within pixels surrounded by said scanning lines and said signal lines.

Zhong is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to remove the gate insulating layer (and necessarily the overlying passivation layer) from the light transmission region within pixels prior to depositing the color filter in order to achieve adequate color filter layer thickness to minimize pixel electrode capacitance (col. 6, lines 1-35).

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the conventional RGB active matrix LCD configuration with passivation layer and overcoat layer by removing the gate insulating layer (and necessarily the overlying passivation layer) from the light transmission region within pixels prior to depositing the color filter and overcoat layer.

As to claim 3 and 8, Zhong teaches the use of a color filter around said contact hole that is thinner than the color filter in said light transmission region (Figure 6c).

As to claims 4, 5, 9 and 10, Zhong teaches the use of a color filter consisting of a photosensitive organic film (resist) with a color pigment or dye (col. 16, lines 43-46) that is substantially flat on the top surface (Figure 6c), therefore a difference in level generated on a surface of the organic film being not more than 0.3 μm.

As to claim 6, the conventional method of manufacturing a RGB active matrix liquid crystal display device comprises steps of: forming a plurality of scanning **lines** on a first substrate; forming a plurality of signal lines crossing the plurality of scanning lines in a matrix manner; forming a plurality of thin film transistors at intersections of the plurality of scanning lines and the plurality of signal lines, respectively; forming a pixel electrode connected to said thin film transistors; forming a counter electrode on a second substrate; injecting liquid crystal between said first substrate and said second substrate and sealing the liquid crystals, wherein said method further comprising the steps of: forming a passivation film to protect each of said thin film transistors. The additional steps of removing part of a gate insulating layer and said passivation film of each of said tin film transistors in a region surrounded by said signal lines and said scanning lines; forming a color filter made of a photosensitive color resist; and forming a transparent conductive film are obvious given the structure of Zhong, Figure 6c.

As to claim 7, the conventional method of manufacturing a RGB active matrix liquid crystal display device comprises steps of: forming a plurality of scanning lines on a first substrate; forming a plurality of signal lines crossing the plurality of scanning lines in a matrix manner; forming a plurality of thin film transistors at intersections of the plurality of scanning lines and the plurality of signal lines, respectively; forming a pixel electrode connected to said thin film transistors; forming a counter electrode on a second substrate; injecting liquid crystal between said first substrate and said second substrate and sealing the liquid crystals, wherein said method further comprising the

steps of: forming a passivation film to protect each of said thin film transistors. The additional steps of removing part of a gate insulating layer and said passivation film of each of said tin film transistors in a region surrounded by said signal lines and said scanning lines; forming a color filter made of a photosensitive color resist; forming an overcoat layer on said color filter; patterning said overcoat laver; forming a contact hole by patterning said color filter while using said overcoat layer as a mask; and forming a transparent conductive film are obvious given the structure of Zhong, Figure 6c.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

Timothy L Rude
Examiner
Art Unit 2871

William L. Sikes
Supervisory Patent Examiner
Technology Center 2800